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3764

BY INTERNATIONAL COURRIER

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent & Trademark Office
COMMISSIONER FOR PATENTS
Crystal Plaza 2
P.O. Box 1450
Alexandria, Virginia
22313-1450, USA

H 03
8/9
10-23

Attention: Tam Nguyen
Examiner

Application/Control Number: 09/830,840
Art Unit: 3764

Re: Office communication dated 10 September 2003

3 October 2003

Thank you for your Office communication. I noted all the issues you have raised in your report and I believe that the attached documentation will satisfy all of your concerns in this application.

1. I hereby submit a new set of 10 claims which are identical to those that were approved by the UK Patent Office when granting me a patent (see item 5 for more details). The claims are included as attachment #1.

2. I hereby cancel all the previous sets of claims which were associated with the application. Please replace them with the set of 10 claims mentioned above.

3. I hereby submit minor amendments to pages 65 & 98 of the description, these revisions were approved by the UK Patent Office. The revision on page 65 (attachment #2) consists in the removal of references to Rolls Royce and Volkswagen. For page 98 (attachment #3), I added lines 15 to 19 to remove certain mechanisms from the invention.

4. I hereby submit minor amendments to drawings pages 13/36 & 26/36 consisting in adding reference numbers which were omitted by mistake (see attachment #4).

5. As I briefly mentioned above, I am pleased to announce that I have recently been granted a patent by the UK based on a final set of 10 claims (1 independent and 9 dependent claims). Patent **GB2358842** was published on 12 February 2003. Please refer to attachment #5 for more details.

6. In addition to having been granted a patent by the United Kingdom, I have also been granted a patent in Australia based on the same 10 claims that I am now submitting. Patent **AU764617** was published on 28 August 2003 and will be sealed after the expiry of the 3 month period for opposition. Please refer to attachment # 6 for more details.

7. I also enclose additional documents to support my application. I believe that the documents listed below will be useful for a better understanding of the invention.

   - Attachment #7 The optical illusion of the leg.
   - Attachment #8 The weigh scale experiment (You won't believe your eyes!).
   - Attachment #9 The stair experiment.
   - Attachment #10 The Ascending Phase.
   - Attachment #11 The Ascending Phase – The experimental proof.

I received the Office communication on 23 September 2003 although it was mailed on 10 September 2003. With a statutory reply period of 30 days, the long delay in the delivery by the postal system created some problems which, in the future, could be avoided by using an alternative delivery system such as e-mail or fax. I would appreciate if you could let me know whether one of these 2 alternatives would be suitable to you.

Looking forward to being granted a US patent, I remain

Yours truly.

André Jacques

André Jacques
Inventor & Applicant

E-Mail: ajacques@lannon.qc.ca
Fax: 707-371-1295
Tel: (819) 275-1514

Attachments

ATTACHMENT #2

Revised page 65 from description

The transmission (the crankset) of the current bicycles with pedals is not fit for the particular type of motor used (the lower limb).

This document is a source of well oxygenated fresh water pouring into an ocean polluted by pedals "with automatic release", with cranksets which we think as of motors, a weight argument of little importance, special techniques to climb hills etc...

Yes, this document is the most important paper on cycling for the last 100 years, and puts into question the very foundations of this industry!

Happy journey to the future users of this invention!

As you have realized, the explanation of our scientific discovery concerning the calf implies various considerations, including the role played by visual perception, the way our mind works, some scientific calculations etc...

There also exists another factor of a psychological nature involving the human nature which allows us to answer the question that was asked on the previous page, i.e: « Have theoretical studies on the functioning of the leg been done in the past by cycling experts and bio-mechanics? » Surely.

However, our psychological factor will allow us to understand why they have not discovered the truth explained in this document.

We shall baptize this psychological factor the Unconscious Intellectual Vanity (UIV), an affliction which we shall designate by UIV.

This UIV is unconscious since the affected people **do not know** that they are afflicted, thus eliminating the possibility of a cure: it is therefore an incurable affliction! The more learned people are, the higher their UIV is; and if you tell these people that they are afflicted by UIV, they will not believe you ... because of the affliction itself ... which prevents them to discover that they are afflicted: **an infernal vicious circle!**

The transmission (the crankset) of the current bicycles with pedals is not fit for the particular type of motor used (the lower limb): ~~with a Rolls Royce motor, one does not use a Wolkswagen transmission!~~

This document is a source of well oxygenated fresh water pouring into an ocean polluted by pedals "with automatic release", with cranksets which we think as of motors, a weight argument of little importance, special techniques to climb hills etc...

Yes, this document is the most important paper on cycling for the last 100 years, and puts into question the very foundations of this industry!

Happy journey to the futur users of this invention!

As you have realized, the explanation of our scientific discovery concerning the calf implies various considerations, including the role played by visual perception, the way our mind works, some scientific calculations etc...

There also exists another factor of a psychological nature involving the human nature which allows us to answer the question that was asked on the previous page, i.e: « Have theoretical studies on the functioning of the leg been done in the past by cycling experts and bio-mechanics? » Surely.

However, our psychological factor will allow us to understand why they have not discovered the truth explained in this document.

We shall baptize this psychological factor the Unconscious Intellectual Vanity (UIV), an affliction which we shall designate by UIV.

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ATTACHMENT #3

Revised page 98 from description

The pressure on the platform being exerted AT THE REAR ~~by the heel, it is evident that the~~ TENSION (traction) on chain 105 is applied ALWAYS on the LOWER portion of the chain, the tension in the upper portion of chain 105 being always NUL: that's the reason for spring 107 driven chain tensor 106. The SHAPE of cam 104 and its position RELATIVE to platform 21 (controlled by the grooves of part (a) of the axle) yield an increase of angle ¬ when the foot moves up from the rear (according to explanations of Fig. 76).

We have used the PARTICULAR CASE of CYCLING to explain the USELESSNESS of the CALF and of the ANTERIOR TIBIAL MUSCLE when we use PEDALS; it is evident that we can apply these results in a UNIVERSAL fashion to EVERYTHING that uses PEDALS (pedal boats, stationary exercise machines, pedal planes! etc...), by replacing these pedals by an appropriate mechanism.

The mechanisms that do not make use of a platform (or a pedal which supports the whole foot) are NOT part of the invention claimed. The mechanisms involved are:

- The rope mechanisms shown in figures 49, 50 and 51.
- The rigid boot shown in figures 52 and 53.

The pressure on the platform being exerted AT THE REAR by the heel, it is evident that the TENSION (traction) on chain 105 is applied ALWAYS on the LOWER portion of the chain, the tension in the upper portion of chain 105 being always NUL: that's the reason for spring 107 driven chain tensor 106. The SHAPE of cam 104 and its position RELATIVE to platform 21 (controlled by the grooves of part (a) of the axle) yield an increase of angle ¬ when the foot moves up from the rear (according to explanations of Fig. 76).

We have used the PARTICULAR CASE of CYCLING to explain the USELESSNESS of the CALF and of the ANTERIOR TIBIAL MUSCLE when we use PEDALS; it is evident that we can apply these results in a UNIVERSAL fashion to EVERYTHING that uses PEDALS (pedal boats, stationary exercise machines, pedal planes! etc...), by replacing these pedals by an appropriate mechanism.

ATTACHMENT #4

Revised drawings – pages 13/36 & 26/36

EXPLANATIONS FOR AMENDMENTS TO DRAWING FIGURES

Page 13/36

Reference numbers were added to identify the following parts:

Identification number	Part identified
15	Axle under the platform.
112	Pedal crank.
2	Axis of rotation of the big toe.

Page 26/36

Reference numbers were added to identify the following parts:

Identification number	Part identified
110	Front foot positioning guide.
111	Rear foot positioning guide.
112	Pedal crank.

«Replacement Sheet»

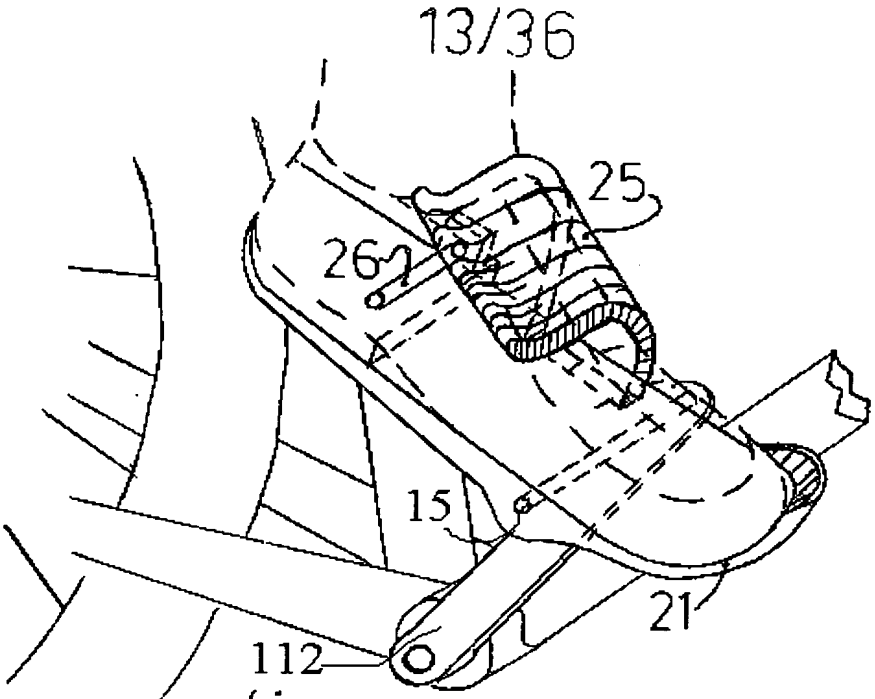

fig 44

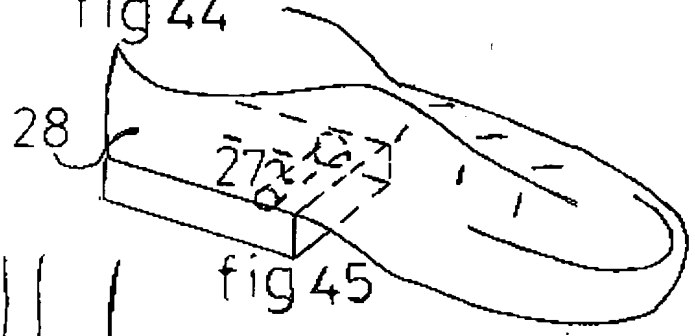

fig 45

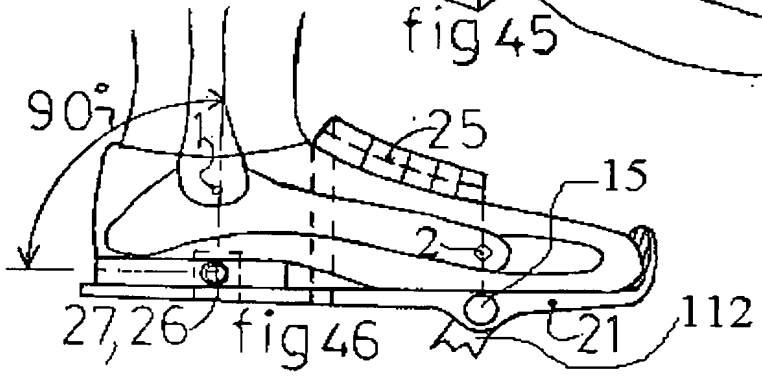

fig 46

«Replacement Sheet»

CA 02253044 1998-11-10

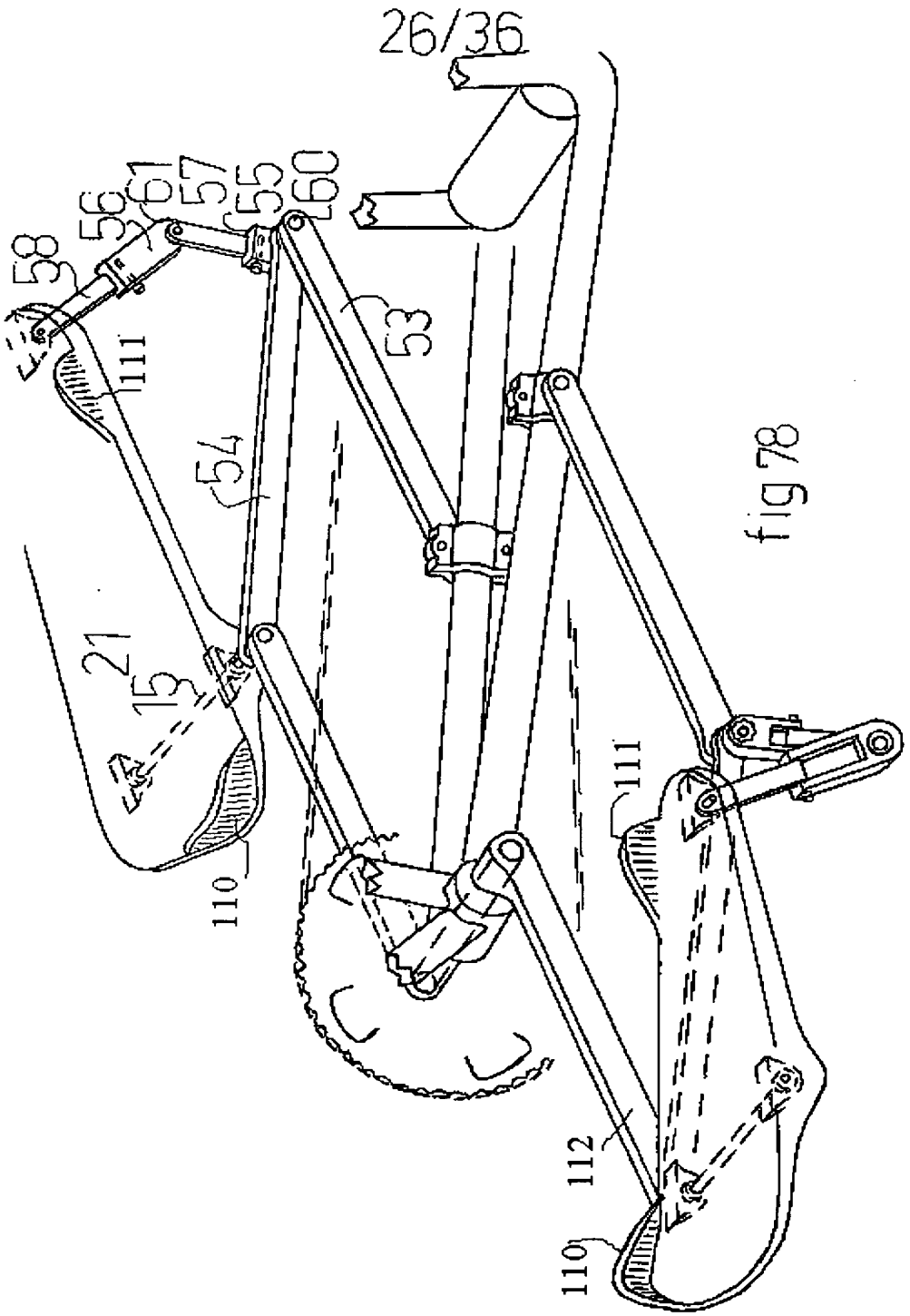

fig 78

ATTACHMENT #5

UK Patent Granted – GB2358842

INVESTOR IN PEOPLE

André Jacques
c/o André Jacques
Suite 559
56 Gloucester Road
Kensington
LONDON
SW7 4UB

The Patent Office

Concept House
Cardiff Road
Newport
South Wales NP10 8QQ
http://www.patent.gov.uk

Switchboard:
01633 814000

Direct line 08459 500 505
Our ref
Your ref -
Date 14 January 2003

Dear Sir/Madam

PATENTS ACT 1977: PATENTS RULES 1995
NOTIFICATION OF GRANT: PATENT SERIAL NUMBER: GB2358842

1. I am pleased to tell you that your patent application number GB0111478.4 complies with the requirements of the Act and Rules, and that you are therefore granted a patent (for the purposes of Sections 1-23 of the Act) as from the date of this letter.

2. Grant of the patent is expected to be announced in the Patents and Designs Journal on 12 February 2003. In accordance with section 25(1), the patent will be treated for all later sections of the Act as having been granted and as taking effect on that date. The patent specification will be published on the same date, and you will receive the Certificate of Grant for your patent and a copy of the specification shortly afterwards.

3. IMPORTANT - It is essential that you take note of the following information about annual renewal payments:

(i) To keep your patent in force, you must pay the Patent Office an annual renewal fee accompanied by Patents Form 12/77 (which can be obtained from this Office).

(ii) For most patents, the first renewal fee is due on the fourth anniversary of the date of filing of the patent application, and each subsequent renewal fee on each subsequent anniversary of the filing date. If you wish, you can pay a renewal fee in the 3-month period before each anniversary.

PLEASE TURN OVER

(iii) In some cases, though, there are special arrangements for the payment of the first renewal fee on a patent. If those special arrangements apply to your patent, you will be given further information when you receive the Certificate of Grant referred to in paragraph 2 above.

(iv) If any renewal fee is not paid by the due date, a further six months is allowed in which to pay the fee. No additional fee is payable if payment is received by the Office during the first month after the due date, but payment received during the second to sixth months after the due date is subject to an additional fee, currently £24 per month or part of a month overdue.

4. If you would like further information about patent renewal fees, or if you would like us to send you a blank Patents Form 12/77, please telephone our Renewals Section on 01633-814655.

5. Copies of the specification of the granted patent will be placed on sale at the Sales Branch, The Patent Office, Cardiff Road, Newport, South Wales NP10 8QQ as from the date in paragraph 2 above and for a limited period at the London Front Office, Harmsworth House, 13-15 Bouverie Street, London, EC4Y 8DP. The copies supplied will have the suffix "B" after the serial number to distinguish the specification of the granted patent from that of the published application.

Yours faithfully

ALISON BRIMELOW
COMPTROLLER GENERAL OF PATENTS,
DESIGNS AND TRADE MARKS

Certificate of Grant of Patent

Patent Number: GB2358842

Proprietor(s): André Jacques

Inventor(s): André Jacques

This is to Certify that, in accordance with the Patents Act 1977,

a Patent has been granted to the proprietor(s) for an invention entitled **"Proof that the contraction of the calf cannot increase the pressure on the pedal and mechanisms to make use of this fundamental discovery"** disclosed in an application filed **3 November 1999**.

Dated 12 February 2003

Alison Brimelow
Comptroller General of Patents, Designs and Trade Marks
UNITED KINGDOM PATENT OFFICE

The attention of the proprietor(s) is drawn to the important notes overleaf.

IMPORTANT NOTES FOR PROPRIETORS OF UNITED KINGDOM PATENTS

1. DURATION OF PATENT AND PAYMENT OF RENEWAL FEES

(i) Your patent took full effect on the date of the certificate, as shown overleaf.

(ii) By paying annual renewal fees, you can keep your patent in force for 20 years from the date of filing of the patent application, which is also shown overleaf.

(iii) The annual renewal fee is due on the fourth and each subsequent anniversary of the date of filing of the patent application. The fee can be paid up to three months before each such anniversary of the filing date. Each renewal fee payment should be accompanied by Patents Form 12/77. If the Form with the fee is not lodged in the Patent Office by the anniversary of the filing date, the fee can still be paid at any time during the following six months. However, you may have to pay a late payment fee. The patent will cease if the renewal fee (and any late payment fee) is not paid before the end of the six month period. When renewing the patent it is advisable to check the current fee rates.

(iv) **It is important that you should set up and maintain effective renewal arrangements to ensure that renewal fees are paid on time.** You should not wait for any reminder from the Patent Office before paying the fee. The Patent Office will send a reminder to the last recorded address for service within six weeks after the anniversary of the date of filing, but this reminder is only intended to alert you to the possible failure of your renewal arrangements.

2. PROCEDURE FOR PAYMENT OF RENEWAL FEES

Patents Form 12/77, together with the fee(s) and fee sheet (FS2) should be addressed to "The Cashier, The Patent Office, Concept House, Cardiff Road, Newport, South Wales NP10 8QQ" and may be posted or delivered by hand to this address. Alternatively, they may be **delivered by hand** to The Patent Office at Harmsworth House, 13-15 Bouverie Street, London, EC4.

Blank Patents Forms 12/77 and fee sheets (FS2) can be requested by post from The Central Enquiry Unit, The Patent Office, Concept House, Cardiff Road, Newport, South Wales NP10 8QQ, by telephone on 08459-500505 (Minicom 08459-222250), by fax on 01633-813600 or by e-mail (enquiries@patent.gov.uk). The Forms and fee sheets can also be downloaded from the Patent Office website (www.patent.gov.uk).

3. REGISTRATION OF OWNERSHIP AS EVIDENCE OF ENTITLEMENT

Any person who becomes legally entitled to a patent or to a share or interest in a patent should apply to the Patent Office to register their entitlement, share or interest.

André Jacques
c/o André Jacques
Suite 559
56 Gloucester Road
Kensington
LONDON
SW7 4UB

For further information or assistance you can contact the Central Enquiry Unit of the Patent Office as indicated above.

(12)UK Patent (19)GB (11)2 358 842 (13)B

(45) Date of publication: 12.02.2003

(54) Title of the invention: Proof that the contraction of the calf cannot increase the pressure on the pedal and mechanisms to make use of this fundamental discovery

(51) Int Cl[7]: **B62M** 1/02

(21) Application No: **0111478.4**

(22) Date of Filing: **03.11.1999**

(30) Priority Data:
(31) **2253014** (32) **10.11.1998** (33) **CA**

(86) International Application Data:
PCT/CA1999/001020 Fr 03.11.1999

(87) International Publication Data:
WO2000/027690 Fr 18.05.2000

(43) Date A Publication: **08.08.2001**

(52) UK CL (Edition V):
B7E EDCP

(56) Documents Cited:
WO 1998/005549 A
BE 000853784 A
BE 000398350 A
DE 003121010 A
FR 002543098 A
FR 000896837 A
US 4909526 A

(58) Field of Search:
As for published application 2358842 A *viz:*
INT CL[7] **B62M**
Other:
updated as appropriate

(72) Inventor(s):
AndréJacques

(73) Proprietor(s):
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P.O.Box 461, L'Annonciation,
Quebec J0T 1T0, Canada

(74) Agent and/or Address for Service:
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United Kingdom

ATTACHMENT #6

Australia Patent Granted – AU764617

IPAustralia
PATENTS - TRADE MARKS - DESIGNS

Discovery House, Phillip ACT 2606
PO Box 200, Woden ACT 2606
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Facsimile +61 -2 6283 7999
Internet http://www.ipaustralia.gov.au
ABN 38 113 072 755

17/07/03

TO: Andre Jacques
Suite 244, 125 Oxford Street
Bondi Junction
NSW 2022, Australia

NOTICE OF ACCEPTANCE

Re: Patent Application No. 78946 / 00 in the name of:
Andre Jacques

Your Reference: - -

The examiner has reported no objections to the application and complete specification as amended by the following alterations:

Item number(s) Specification 1 (01/07/03)
Application
Drawings

The application and complete specification were accepted on 15/07/03 and a notice of the acceptance will appear in the Official Journal of Patents on 28/08/03 under serial number 764617

All future correspondence should refer to this serial number.

Your patent will be sealed as soon as practicable after the 3 month period for opposition has expired.

You are reminded that, except where your application has undergone modified examination, you are required under subsection 45(3) to inform the Commissioner of the results of any searches carried out prior to the grant of the patent.

Enclosed for your information, are details of the application data at acceptance. This data will be the basis for any Deed that may later be issued. At present there is no provision under the Patents Act to reissue Deeds. It is, therefore, important that you notify this office of any changes before the opposition period expires.

Maria LEWIS
Patent Notification
Ext. 2020

Serial Number : 764617

Your Reference : - -

Acceptance Date: 15/07/03 Acceptance to be Advertised: 28/08/03

Complete Filing Date: 19/10/00 OPI Date: 08/05/01

Applicant Name : Andre Jacques
Address : Case Postale 461
Annonciation
Quebec J0T 1T0
Canada

Inventor Names: Andre Jacques

Title: Pedal assembly device

Address for Service: Andre Jacques
Suite 244, 125 Oxford Street
Bondi Junction
NSW 2022, Australia

Prior Art Documents:
US 4909526
FR 896837
BE 398350

PRIORITY DETAILS

Date	Application Number	Country
25/10/99	2290097	CANADA

IPC Mark	Primary
B62M 001 / 02	Y

Continuation Fee Due Date: 19/10/05

Acceptance Notices for User COPYUS Journal of 28/08/03
Private Applicant

78946 / 00	764617	- -	10

(12) **PATENT**
(19) **AUSTRALIAN PATENT OFFICE**

(11) Application No. **AU 200078946 B2**
(10) Patent No. **764617**

(54) Title
Pedal ass mbly device

(51)[7] International Patent Classification(s)
B62M 001/02

(21) Application No: **200078946**

(22) Application Date: **2000.10.19**

(87) WIPO No: **WO01/30640**

(30) Priority Data

(31) Number	(32) Date	(33) Country
2290097	**1999.10.25**	**CA**

(43) Publication Date : **2001.05.08**
(43) Publication Journal Date : **2001.07.26**
(44) Accepted Journal Date : **2003.08.28**

(71) Applicant(s)
Andre Jacques

(72) Inventor(s)
Andre Jacques

(74) Agent/Attorney
Andre Jacques,Suite 244, 125 Oxford Street,Bondi Junction,NSW 2022, Australia

(56) Related Art
US 4909526
FR 896837
BE 398350

AU 200078946

(12) DEMANDE INTERNATIONALE PUBLIÉE EN VERTU DU TRAITÉ DE COOPÉRATION EN MATIÈRE DE BREVETS (PCT)

VERSION RÉVISÉE

(19) Organisation Mondiale de la Propriété Intellectuelle
Bureau international

(43) Date de la publication internationale
3 mai 2001 (03.05.2001)

PCT

(10) Numéro de publication internationale
WO 01/30640 A1

(51) Classification internationale des brevets⁷ : B62M 1/02

(21) Numéro de la demande internationale :
PCT/CA00/01204

(22) Date de dépôt international :
19 octobre 2000 (19.10.2000)

(25) Langue de dépôt : français

(26) Langue de publication : français

(30) Données relatives à la priorité :
2,290,097 25 octobre 1999 (25.10.1999) CA

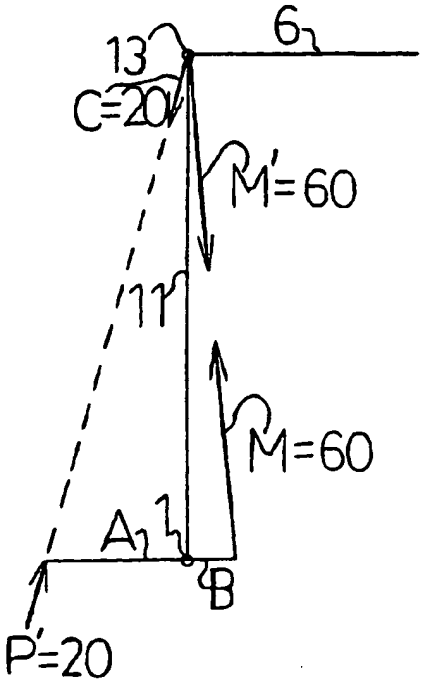
(71) Déposant et
(72) Inventeur : JACQUES, André [CA/CA]; Case postale 461, Annonciation, Québec J0T 1T0 (CA).

(81) États désignés *(national)* : AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

[Suite sur la page suivante]

(54) Title: PEDAL ASSEMBLY DEVICE

(54) Titre : DISPOSITIF POUR PEDALIER



(57) Abstract: In order to understand the invention, it is necessary to BEGIN by understanding IN DEPTH the following DISCOVERY which relates to the calf during pedaling; the entire world is misled by two OPTICAL ILLUSIONS (figs. 21 and 22 symbolize a lower member pressing down upon a pedal, 6 is the thigh, 11 the leg, A+B the foot and 1 is the ankle). The first ILLUSION (fig 21) is to believe that the calf (M) INCREASES the pressure on the pedal. The second ILLUSION (fig 22) is to FAIL to see that the force M is CANCELLED OUT by the force M'. The total amount of pressure on the pedal is derived from the THIGH EXCLUSIVELY, whereby the contraction of the CALF is a loss of energy. The aim of the invention is to REPLACE the pedal by a mechanism which AVOIDS THE USE OF THE CALF, thereby enabling performance to be MULTIPLIED BY TWO WITHOUT incurring A LOSS OF POWER!

(57) Abrégé : Pour comprendre cette invention, il faut COMMENCER par comprendre EN PROFONDEUR la DECOUVERTE suivante qui concerne LE MOLLET quand on appuie sur une pédale, deux ILLUSIONS D'OPTIQUE trompant LE MONDE ENTIER (Les fig 21 et 22 symbolisent un membre inférieur appuyant sur une pédale, 6 étant la cuisse, 11 la jambe, A+B le pied et 1 la cheville). La 1ère ILLUSION (fig 21) est de croire que le mollet (M) AUGMENTE la pression sur la pédale. La deuxième ILLUSION (fig 22) est de NE PAS voir la force M' qui ANNULE la force M. La TOTALITE de LA PRESSION sur la pédale provient DE LA CUISSE SEULEMENT, la contraction du MOLLET étant une PERTE D'ENERGIE. L'invention consiste à REMPLACER la pédale par un mécanisme permettant d'EVITER L'USAGE DU MOLLET ce qui MULTIPLE PAR DEUX le rendement SANS PERTE DE PUISSANCE !

WO 01/30640 A1

(84) États désignés *(régional)* : brevet ARIPO (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), brevet eurasien (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), brevet européen (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), brevet OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Publiée :

— *avec rapport de recherche internationale*

— *avec revendications modifiées*

(88) Date de publication du rapport de recherche internationale révisé: 31 janvier 2002

Date de publication des revendications modifiées: 13 septembre 2001

(15) Renseignements relatifs à la correction: voir la Gazette du PCT n° 05/2002 du 31 janvier 2002, Section II

En ce qui concerne les codes à deux lettres et autres abréviations, se référer aux "Notes explicatives relatives aux codes et abréviations" figurant au début de chaque numéro ordinaire de la Gazette du PCT.

ATTACHMENT #7

Optical illusion of the leg

Should we believe
WHAT WE SEE?

Flat Foot

The invention that will make you
LOSE THE PEDALS!

THE BICYCLE REVOLUTION BEGINS HERE!

THE OPTICAL ILLUSION OF THE LEG

How the entire world, including the experts, interprets pedalling.

Today this interpretation is exactly the same for everyone: the experts, the man of the street, the racer ... All visualize the functioning of the leg in the same fashion, in the particular case of its use with the pedal. It is that interpretation which will now be given; then we will prove that this interpretation is false and we will explain the optical illusion which has tricked everyone. To properly assimilate what follows, try and forget completely what has previously been explained, especially the comparison stairs/cyclist on a hill (its only purpose was make you understand that "something important" has been completely forgotten by the current cycling industry). Put yourself in everyone's shoes: interpret pedalling as they do; here is the interpretation of the world:

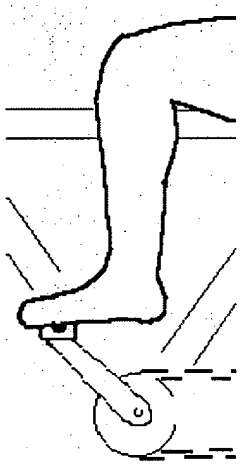


Fig. B

Fig. B depicts a leg which applies pressure on a pedal, in the seated position. Is this drawing normal? Yes, of course: the position of the foot on the pedal is the one recommended by the experts, the toe joints resting on the pedal axis, the heel free-floating. If we ask everyone (experts, racers etc...) which muscles produce the pressure on the pedal, all will answer the same thing after reflection:

"... the pressure on the pedal comes from 2 sources, the first being the thigh and the second being the calf, the 2 forces COMBINING (adding together) ..."

Next---->

Scale experiment | Stair experiment | The optical illusion of the leg | The Ascending Phase
Home | Documentation | Comments?

For more information, please contact hjacques@flatfootbicycles.com

THE OPTICAL ILLUSION OF THE LEG (cont'd)

An expert will explain further and state (see Fig. C & D below):

..."the pressure on the pedal is made up of 2 forces which combine; the first comes from the contraction of the thigh muscles (mainly the gluteal and the quadriceps) which pushes the leg down producing the first pressure force (P1, Fig. C). The second force (Fig. D) on the pedal comes from the contraction of the calf which pulls the heel upwards, which has a tendency to rotate the foot around the ankle, producing a downward movement of the toe joints and thus resulting in a second pressure force (P2, Fig. D) on the pedal. The total pressure on the pedal is the sum of the pressure from the thigh and from the calf (i.e.: P1+P2) ."

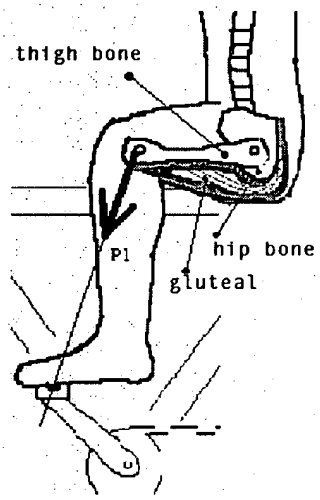


Fig. C

The contraction of the thigh muscle pushes thigh bone downwards, producing force P1 on the pedal axis.

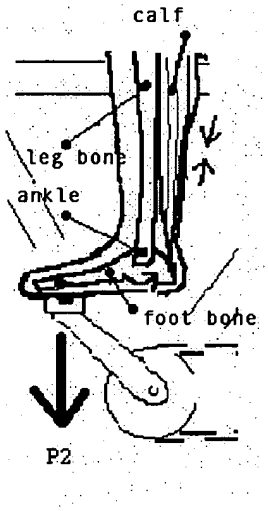


Fig. D

The contraction of the calf pulls the heel upwards, thus pushing downwards the tip of the foot, producing force P2 on the pedal axis.

<<.....so, the TOTAL PRESSURE on the pedal is obviously P1 + P2 >>
All cycling experts say that, but they are WRONG!!

They are mislead without knowing it, against their will;
they are nevertheless very competent, qualified!!!

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THE OPTICAL ILLUSION OF THE LEG (cont'd)

What follows will shock you! You will not believe me, just like the gr at scientists did not believe the man who wanted t explain that the sun d es n t mov across the sky, that it is an optical illusion: they refused to believe even with supporting proof! In our case, it will be mostly the experts in cycling who will refuse to believe. In making the first proposed experiment (with the weighing scale), you will begin to believe and, by trying a FLATFOOT bicycle, you will be compelled to believe!

This optical illusion is represented by Fig. D below.

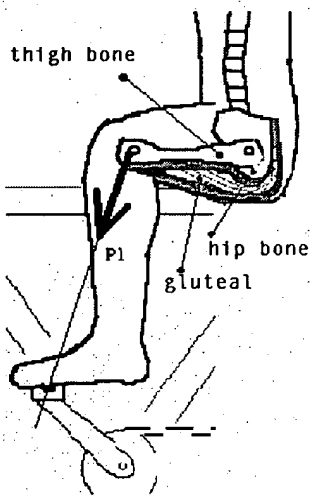

Fig. C

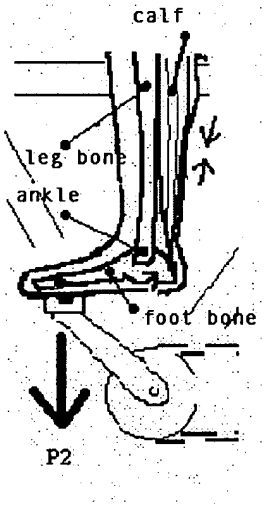

Fig. D

Fig. D is NOT REAL, it is an OPTICAL ILLUSION!!

In reality, the force P2 is zero: the calf, by contracting, cannot exercise any pressure on the pedal! The total pressure applied to the pedal comes only from the thigh (force P1, Fig. C). And this statement (which we will prove shortly with experiments) is the contrary to what the whole world thinks!

It is how the pedal is used that forces the calf to contract since the heel is free floating. Because the contraction of the calf cannot increase the pressure on the pedal, this calf contraction is pure energy waste : therefore, the FLATFOOT eliminates this waste of energy by providing support to the heel, without any loss of propulsive pressure since the whole pressure comes uniquely from the thigh!

There is a great similarity between the standing and seated pedalling positions: standing, the calf contraction is 3 times the weight of the cyclist while, seated, the calf contraction is 3 times the downward pressure applied by the thigh; the only difference between the two positions resid s in th intensity of the forces at play.

Put into words, th optical illusion, which has tricked veryone for at l ast a century, is :

"... to believe that the calf contraction pulls the heel upwards, making the foot rotate around the ankle, causing a downward movement of the tip of the foot and thus increasing the pr ssur on the pedal (since the tip of the foot evidently r sts on the pedal) ...".

Later in this document. we will explain with precision why people falsely believe that: it is because of the way our mind functions when visual perception is involved!

As you will see, this invention involves much more than just simple calculations in physical science: we must also take into account psychological and biological considerations.

It is the only way to explain how billions of people have been induced to error!!!

The next few pages are very revealing, since we prove (experimentally) the real existence of the optical illusion of the leg!

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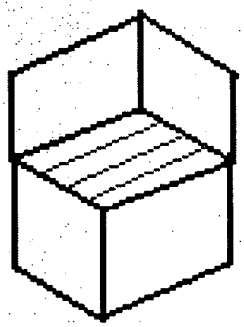
THE OPTICAL ILLUSION OF THE LEG (cont'd)

A visual mystery has held cycling in slavery for m re than 150 years, and no one realises this! An optical illusion of such fantastic power that it has l d the whole world in error, including the greatest world cycling experts! The FlatFoot invention challenges the very foundations of today's cycling and revisits the basic principles which we always considered as true while they are false!

Put into words, the optical illusion which has tricked everyone for more than a century is:

> **"... to believe that the calf contraction pulls the heel upwards, making the foot rotate around the ankle, causing a downward movement of the tip of the foot and thus INCREASING the pressure on the pedal (since the tip of the foot evidently rests on the pedal)..."**

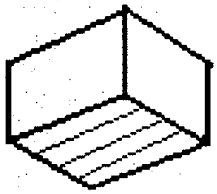
In very simplistic terms, here is how this optical illusion has fooled everyone, including the experts.



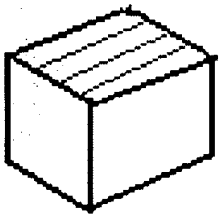
Concentrate on the drawing on the left. What do you see?

One box, right? Wrong!

There are 2 boxes!



The top box, where the hatching is the bottom of the box.



The bottom box, where the hatching is the top of the box.

It is impossible to see both boxes at the same time!

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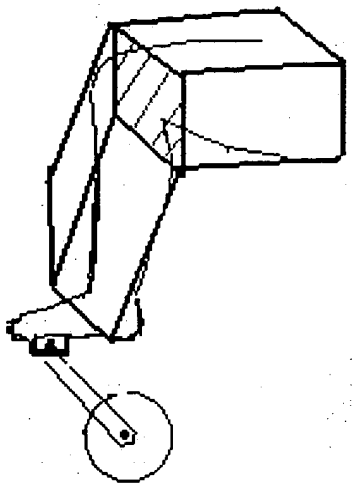
THE OPTICAL ILLUSION OF THE LEG (cont'd)

This illusion is caused by the fact that our mind has limited power! Our mind treats both boxes as if they were totally independent of each other; howev r these boxes depend on one another since they share the hatched portion. It is this dependency between the 2 boxes which prohibits our mind to see both of them at the same time, the hatching belonging to both boxes.

What is the connection of the above with the optical illusion of the leg? It is DIRECT as we will demonstrate now!



The drawing on the left represents the leg of a cyclist while pedalling in the seated position. Let's make the analogy with the previous drawings:

1. **let's say that the thigh plays the role of the top box,**
2. **that the part of the lower leg with the calf plays the role of the bottom box,**
3. **and the knee represents the hatched portion.**

Let's now go back to the interpretation that the whole world gives about pedalling:

> **"... the pressure on the pedal comes from 2 sources, the first being the thigh and the second the calf, the 2 forces combining..."**

When one asks people (even the experts) to identify which muscles apply the pressure on the pedal, what do they do? They see the leg of a cyclist and automatically try to analyse the operation of either

the thigh (top box)
OR
the calf (bottom box)

but not the operation of the thigh and the calf together, since our mind is incapable of analysing the simultaneous operation of the thigh and the calf !

They analyse the thigh first and the calf after (or the calf first and the thigh aft r), but not both at the same time, and th y ADD the results xactly lik if the thigh acts INDEPENDENTLY from the calf, xactly as if the thigh was SEPARATED from the calf; but they are NOT separated because the KNEE EXISTS (th quival nt of the hatched portion). Then , they ADD the results of the two analysis and g t the world-wide interpretation stated above.

In other words, the knee prevents us from analysing the thigh and the calf at the same time, as the hatched portion prevents us from seeing the 2 boxes at the same time!!

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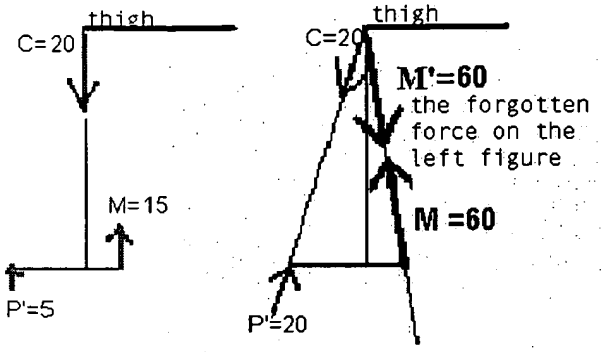
THE OPTICAL ILLUSION OF THE LEG (cont'd)

The mysterious and forgotten force M'



The following is a brief explanation of the mystery which has kept cycling in the dark for 150 years! The diagram on the left represents the cycling industry's view (which is FALSE) of what forces are involved when the cyclist applies downward pressure on the pedal, in the seated position.

Because of the optical illusion of the leg discussed earlier, the downward force M' coming from the knee (this force is shown only in the right figure above) has been completely ignored for the last 150 years! Please note this: the right figure does not exist anywhere in the world! Unbelievable but true!

A muscle like the calf is attached at TWO extremities:

1. **there is the lower point of attachment which attaches the calf to heel bone via the Achilles tendon: the calf, by contracting, pulls the heel upwards (symbolized by the arrow M on both figures).**

2. **there is the upper point of attachment which attaches the calf to the knee: the calf, by contracting, pulls the knee downwards (symbolized by the arrow M' on the right figure ONLY).**

But, M and M' have the same line of action and are of equal intensities but have opposite directions. M and M' cancel each other: calf contraction is TOTALLY USELESS, but spends a lot of energy! All one needs to do is to eliminate the use of the calf (by providing support to the heel: that's what FlatFoot does), resulting in a fantastic energy savings WITHOUT loss of pressure on the pedal!!!

???? Fundamental question among all ????

Why has the world of cycling completely forgotten the UPPER point of attachment of the calf?

It is not logical! Indeed, if we took into account the traction of the calf on th he l, then it would be completely logical to also take into account the tracti n f the calf on th kne !

Then why has the cycling world NOT done it?

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THE OPTICAL ILLUSION OF THE LEG (cont'd)

The mysterious and forgotten force M' (cont'd)

Print the following answer in golden letters:

When we look at a leg applying pressure on a pedal, we have the tendency to visualize only the forces which tend to create movement, a displacement which is visually perceptible. If a given force creates a displacement which is NOT visually apparent, our mind ignores this force and that is the case of the downward force M'.

When you look at a leg applying on a pedal in the seated position, you visually perceive that the contraction of the thigh tends to move the thigh downwards: then you visually perceive the contraction of the thigh. You visually perceive the traction of the calf on the heel because it tends to displace the heel upwardly (again some movement). Furthermore, we visually perceive the pressure of the tip of the foot on the pedal for the following 2 reasons:

1. **the traction of the calf on the heel makes the foot rotate around the ankle (movement again),**

2. **the pressure of the tip of the foot on the pedal pushes the pedal downwards thus propelling the bicycle forward (again, more movement).**

The answer to our riddle:

The traction of the upper calf (M') on the knee does not create any visually perceptible movement, therefore, we do not visually perceive this force M':

OUR EYES IGNORE IT!

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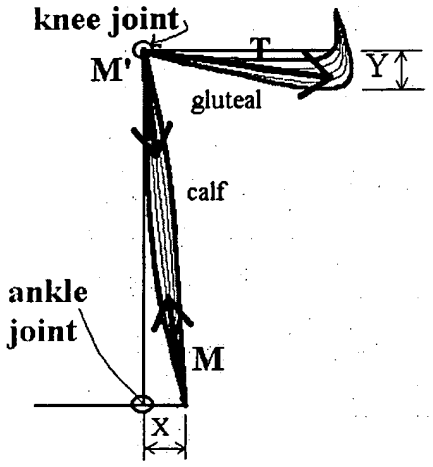
THE OPTICAL ILLUSION OF THE LEG (cont'd)

The mysterious and forgotten force M' (cont'd)

Here are some additional explanations:



About VISUAL PERCEPTION!
It is all a matter of
VISUAL LEVERAGE!!

Everyone knows that, when the thigh muscles contract (force T), the effect is to push the thigh down; this is because of the (average) leverage distance Y. We visualize force M because of the existence of distance X which is the distance between the ankle joint and the point of attachment of the calf on the heel. So, there is a leverage visual effect, because of distance X.

But, in the case of our « forgotten force » M', there is NO such DISTANCE that creates a LEVERAGE VISUAL EFFECT!!! The point of attachment of the UPPER part of the calf IS DIRECTLY ON the knee joint: there is no visual DISTANCE between the knee joint and the point of attachment of the calf on the knee! So,

WE DO NOT VISUALIZE FORCE M'!!!

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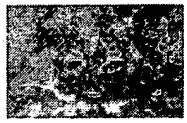
ATTACHMENT #8

The weigh scale experiment



Should we believe
WHAT WE SEE?

Flat Foot

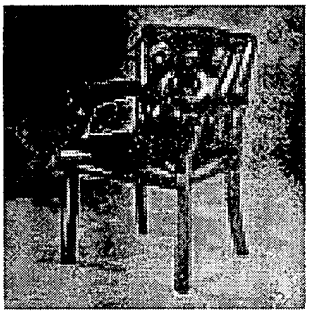
The invention that will make you
LOSE THE PEDALS!

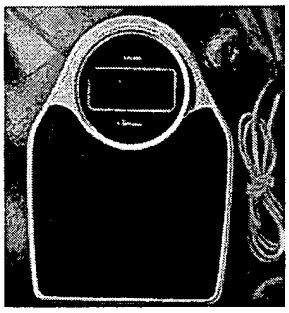
THE BICYCLE REVOLUTION BEGINS HERE!

Experimental proof that the CALF CANNOT INCREASE THE PRESSURE ON THE PEDAL and of the ENERGY WASTE that follows.

THE WEIGH SCALE EXPERIMENT

All we need for material is a straight chair and a simple portable weighing scale (the type that one would use to check one's own weight).





Sit down and place one foot on the weighing scale; leave the other foot on the floor besides the weighing scale. Do not try to create leverage with your hands (e.g: by pulling on the chair armrests) and do not try to push with your body by bending forward; remain straight up on the chair and apply pressure with one leg only. It is important that the other foot is not lifted; it must remain on the floor (we are instinctively tempted to lift the other foot without thinking about it: this will falsify the results). Repeat the experiment several times to ensure consistent and correct results. We will carry out 2 tests (see Fig. E & F on the next page).

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THE WEIGH SCALE EXPERIMENT (cont'd)

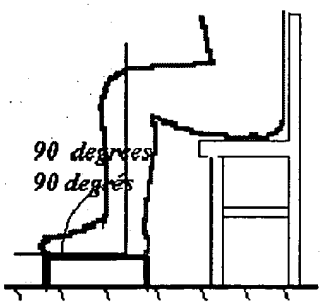

Fig E: In the first test, the heel must rest on the weighing scale, in order to avoid calf contraction. Thanks to the weighing scale, we can measure the pressure applied by the leg! Therefore, the weighing scale replaces the prototype since the heel is supported!

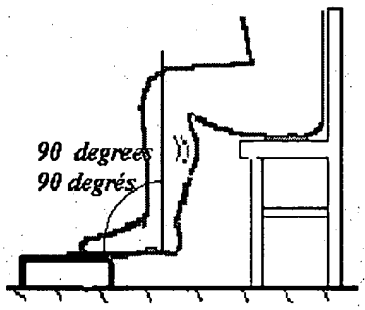

Fig F: In the second test, only the tip of the foot rests on the weighing scale, with the heel free-floating, which forces the calf to contract, exactly as in the case of a pedal. Here, the scale plays the role of a real pedal with the advantage that we can measure the pressure!

Thanks to these 2 simple tests, we can measure the difference between the FLATFOOT and the ordinary pedal. Please do not be content with reading about the experiment: carry out these 2 tests; this way you will be able to physically verify that the optical illusion is a physical reality! You will be surprised by the results which will contradict what the whole world thinks, that is BILLIONS OF PEOPLE!

The two tests (Fig. E & F) consist in applying full force on the weighing scale with one leg only and to note the pressure obtained. This is very important: do not try to apply the force with the leg in a jerky fashion; you must apply the force slowly and gradually until you reach the maximum, and note the result. The only difference between the 2 tests is that the calf does not exercise any force in the first test (Fig. E, the equivalent of the FLATFOOT), and the calf exercise a lot of force in the second test (Fig. F, the equivalent of the PEDAL). Evidently, the thigh exercises the same force in the two tests since you have applied maximum force in both cases.

Before you carry out the two tests, please note that, if the following is what the whole world thinks as true, i.e:

> **The pressure on the pedal comes from 2 sources, the first being the thigh and the second the calf, the 2 forces combining (adding together).**

then, in carrying out the tests, you would n rmally btain a HIGHER pr ssur in the s cond test (Fig. F) than in the first (Fig. E) because both th thigh and th calf exert a force in the case of the second test while only the thigh applies pressure in the case of the first test.

Since the thigh applies the same pressure for both tests (because we apply maximum pressure), then, if the whole world is right, the pressure for the second test must be greater than that obtained during the first test. This is what OUR EYES seem to indicate. Now let's verify if the whole world is right or wrong by doing the tests!

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THE WEIGH SCALE EXPERIMENT (cont'd)

"The astonishing answer is THE WHOLE WORLD IS MISTAKEN! Even I (as the inventor) had difficulty in believing what the graduated weighing scale was showing! It seemed totally crazy, contrary to natural laws, contrary to what I thought was visually true! I was forced to admit that my eyes were deceiving me! I then thought of the optical illusion! But it remained that I had to understand the phenomenon and try and explain it in simple terms: it took me two whole years to complete that task."

The inventor carried out the 2 tests dozens of times and he has always obtained the exact same results, namely 54 pounds of pressure in each of the two tests:

the pressure obtained was exactly the same, whether the calf exerts a force (Fig. F) or not (Fig. E)!

There is only one possible conclusion:

"The contraction of the calf in the second test (Fig. F) DOES NOT increase the pressure on the weighing scale (the pedal)..."

Therefore, when one pedals in the seated position using a conventional bicycle, the total pressure on the pedal comes only from the contraction of the thigh muscles: the forced contraction of the calf is pure waste of energy (and this waste is enormous as the next two tests will show).

The above statement is exactly the opposite of what the whole world thinks !

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THE WEIGH SCALE EXPERIMENT (cont'd)

Before you come to the conclusion outlined bel w, you n ed to read th section which deals with the optical illusion of the leg.

CONCLUSION:

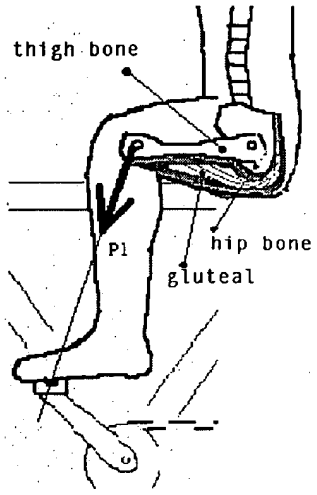

Fig C

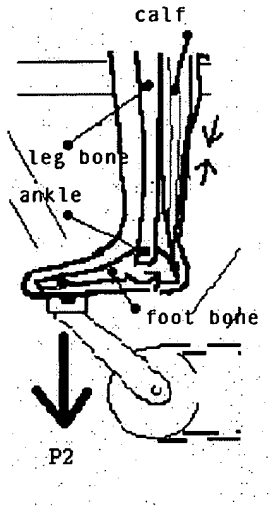

Fig D

The contraction of the thigh muscle pushes thigh bone downwards, producing force P1 on the pedal axis.

The contraction of the calf pulls the heel upwards, thus pushing downwards the tip of the foot, producing force P2 on the pedal axis.

Fig. D represents an OPTICAL ILLUSION; force P2 is ZERO: it does not exist,

IT IS AN OPTICAL ILLUSION!

The happy days of the pedal are gone!

The FLATFOOT makes the current pedal USELESS. That's PROGRESS!

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ATTACHMENT #9

The stair experiment

Should we believe
WHAT WE SEE?

Flat Foot

The invention that will make you
LOSE THE PEDALS!

THE BICYCLE REVOLUTION BEGINS HERE!

Experimental proof that the use of the CALF in current cycling methods results in an ENORMOUS WASTE OF ENERGY.

THE STAIR EXPERIMENT

All you need is a staircase!

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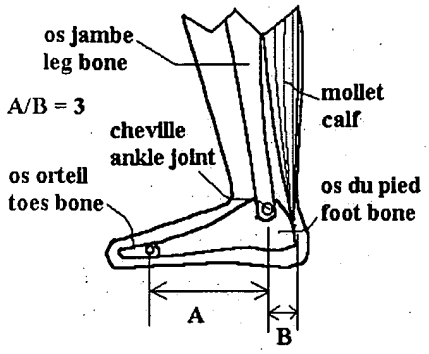
THE STAIR EXPERIMENT (cont'd)



Above is the bone structure of the foot where:

A is the distance between the toe joint and the ankle, and

B is the distance between the ankle and the point of attachment of the calf on the foot bone (achilles' tendon), and

A/B = 3 (approx.)

Suppose that you attempt to climb the stairs of a 30 storey building the normal way by placing the heels on the stairs: you are tired, but you have reached the top. Take note of your fatigue level. Also take note that you did not strain your calves. After a good night's rest, you attempt the second part of the experiment.

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THE STAIR EXPERIMENT (cont'd)

The next day, try and climb the 30 storeys by keeping the he ls free floating thus forcing the calves to ex rcise a tension of three (3) times your weight.

How many storeys do you think you will climb using the same amount of energy? It is important to climb at the same rate as the previous day to make a valid comparison.

The answer: between 10 to 20 storeys only, compared to 30 storeys the previous day when your heels were placed on the stairs, using the same amount of energy and climbing at the same speed!

This stair experiment demonstrates the complete waste of the energy caused by the forced contraction of the calves which, in this case, support THREE TIMES YOUR WEIGHT.

By leaving your heels free floating, you will never be able to climb the 30 storeys, regardless of your physical condition.

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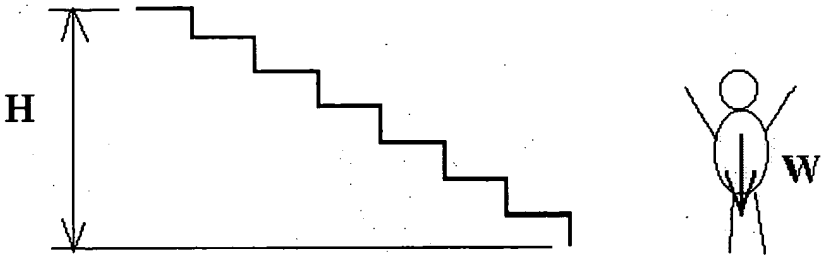
THE STAIR EXPERIMENT (cont'd)

From a scientific point of view:



The minimum amount of energy required to climb stairs is equal to W x H, where W is the person's weight and H is the vertical distance reached by the person. Regardless of the way that person climbs the stairs (heels on the stairs or heels free floating), the minimum energy required will always be W x H.

By climbing with the heels on the stairs (calves not used), you will already have spent the minimum amount of energy W x H required to climb the stairs, that energy being provided by your thigh muscles.

Then why spend more energy than necessary? By keeping your heels free floating, your body will spend additional energy (which is pure waste) simply to compensate the forced contraction of the calves which support three times your weight.

To avoid this waste of energy, all you need to do is place your heels on the stairs! That's all!

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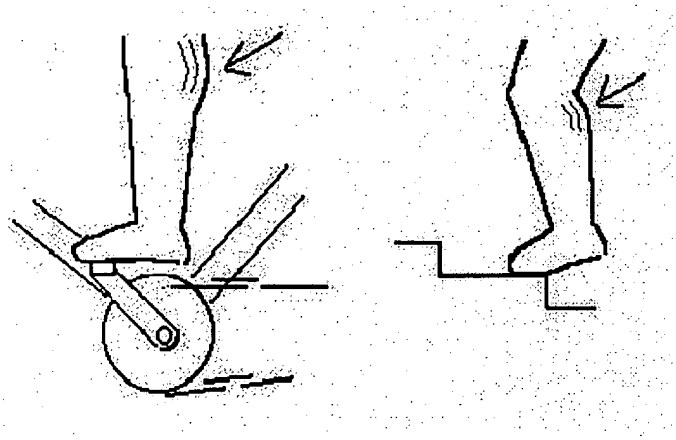
THE STAIR EXPERIMENT (cont'd)



The drawing on the left represents the current method of cycling, i.e: the heel is floating. The one on the right shows someone climbing stairs with the heel free float

These represent the exact same phenomenon!

In other words, the current method of cycling is as wasteful of energy as is climbing stairs on the tip of your feet!

There is an extremely simple solution to this problem.

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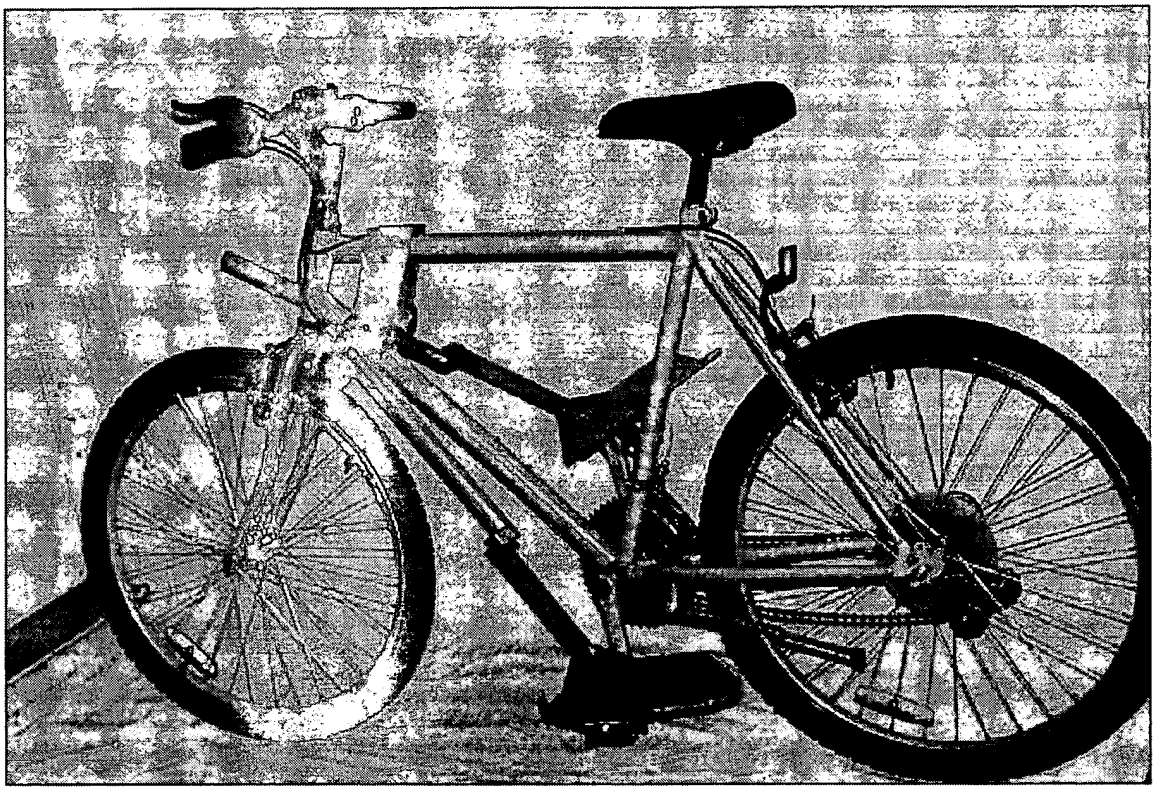
THE SOLUTION

SIMPLY REPLACE THE PEDAL BY A PLATFORM WHICH SUPPORTS THE HEEL!

THE PRODUCT

THE FLATFOOT BICYCLE!



The WILD BOAR model

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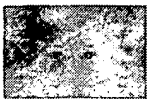
ATTACHMENT #10

The Ascending Phase

Devrait-on croire ce que ***NOUS VOYONS?***



Should we believe ***WHAT WE SEE?***

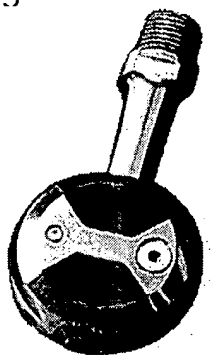
L' invention qui va vous faire ***PERDRE LES PÉDALES!***

Flat Foot

The invention that will make you ***LOSE THE PEDALS!***

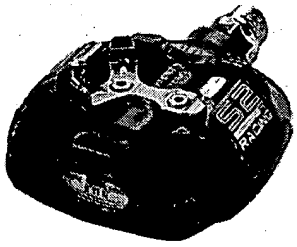
La Phase Ascendante:

La crème sur le gâteau!



À gauche, « l'extraordinaire » pédale de Speedplay Inc.

At left, the « fabulous » Speedplay Inc. pedal.



À gauche, « l'extraordinaire » pédale de Look Inc.. La semelle de la chaussure comporte DES TROUS dans lesquels s'insèrent les coudes de métal situés sur la pédale.

At left, the « fabulous » Look Inc. Pedal. The sole of the shoe is fitted with HOLES in which are inserted metal elbows located on the pedal.

En réalité, ces 2 systèmes de pédales sont *TOTALEMENT SANS VALEUR!!* Et pourquoi? À cause de la FLATFOOT! Ces pédales sont sans valeur parce qu'elles ne *permettent pas de supporter le talon, ce qui OBLIGE LE MOLLET à DÉPENSER DE L'ÉNERGIE INUTILEMENT!*

La FLATFOOT a infiniment mieux que cela à proposer!

In reality, these 2 pedal systems are *TOTALLY WITHOUT VALUE!!* And why? Because of the FLATFOOT! These pedals are worthless since they *do not support the heel, thus FORCING THE CALF to WASTE ENERGY!*

The FLATFOOT has infinitely better to propose!

Juin 2000

June 2000

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The FlatFoot has a surprise for you!

Indeed, in addition to multiplying by two the energy efficiency (at minimum) which the invention's platform allows by eliminating the use of the calf, the same platform also allows the ***doubling of the power****: a real feat!*

> ***Thus we can double both the energy efficiency and the power!***

How can this feat be possible? By effectively using ***both*** *phases of the pedaling cycle!*

Fig. 38 symbolizes the ***descending phase*** *for a regular circular pedal: the pedal (15)*[1] *is pushed downward going from the upper neutral position (HI) to the lower neutral position (LO); it is this descending phase which has been our subject since the beginning of this document, and we have concluded that the pedal needed to be replaced by a platform which supports the heel* ***in order to avoid the contraction of the calf****, thus* ***doubling the energy efficiency.***

Fig. 39 symbolizes the ***ascending phase****, when the pedal (15) goes from the lower neutral position (LO) to the upper neutral position (HI); evidently this phase can be active only* ***if the foot is attached*** *to the pedal.*

Fig. 40 represents the leg of a cyclist whose foot tip (the toe joints on the pedal axis) is attached to the pedal by a strap (24), allowing the cyclist to pull the pedal upwards, this propelling force adding to the downward push of the other leg: thus, the two legs work ***simultaneously*** *for propelling the bicycle.*

During the ascending phase (Fig. 40), the two main muscles which are being used are:

1. *the* ***anterior leg muscle (23)*** *which flexes the foot, in other words, the muscle which is used to* ***lift the tip of the foot****; it is the antagonist of the calf (4, Fig. 41): the anterior leg muscle (23) and the calf (4) fulfils antagonistic roles, the calf pushing the tip of the foot down while the anterior leg muscle pushes it upwards.*

2. *The* ***psoas-iliac (22)*** *is used to* ***lift the thigh****; it is the* ***antagonist*** *of the gluteal muscle (5, Fig. 41) : the psoas-iliac (22) and the gluteal muscle (5) fulfill antagonistic roles, the psoas-iliac pushing the thigh* ***upwards*** *while the gluteal muscle (5) pushes it* ***downwards****.*

The psoas-iliac (22) is a powerful muscle made of two parts, one originating from the anterior side of spinal column (back abdomen wall), the other originating from the anterior part of the pelvis with a common tendon on the thighbone; we note an interesting result:

> *If we make* ***maximum*** *use of the psoas-iliac in order to pull the pedal upward (Fig. 40), this has the tendency to strengthen the abdominal muscles, thus* ***reducing the waistline,*** *in addition to* ***doubling*** *the available power!!!*

[1] The number or letters in parenthesis (15) represent the item or element on the associated drawing (e.g: Fig. 38).

*However, there is an **enormous problem** with the classic concept of Fig. 40, that is, the use of a strap to attach the foot to the pedal and, to better understand the problem, let's go back to our conclusions with respect to the **descending** phase (the useless role of the calf) and understand that, for the **ascending** phase, the **anterior leg muscle (23) is totally useless in increasing the upward traction on the pedal, the totality of this upward traction coming uniquely from the psoas-iliac (22).***

*Fig. 42 symbolizes a leg applying pressure on the pedal during the **descending** phase; **only** the muscles being used during this first phase of cycling are shown (the calf 4 and the gluteal muscles 5); we also have **A/B = 3.** Fig. 43 symbolizes a leg pulling the pedal **upward** during the **ascending** phase, thanks to the strap (24); **only** the muscles being used during this second phase of cycling are shown **(anterior leg muscle 23 and the psoas-iliac 22)**; we also have **A/D = 3**, **A** being the distance between the ankle (1) and the pedal axis, and **D** being the distance between the ankle (1) and the average point of attachment of the tendon of anterior leg muscle (23) onto the foot bone.*

Note: Fig. 41 is simply a combination of Fig. 42 & 43.

IMPORTANT:

*With respect to Fig. 42, we have **fully proven** that:*

1. ***the calf (4) is useless for increasing the pressure on the pedal** and, therefore, **energy is wasted; we have solved the problem of wasted energy** by replacing the pedal with a platform which supports the heel in order to eliminate the use of the calf.*

2. *the **totality** of the pressure on the pedal comes uniquely **from the thigh (5).***

*With respect to Fig. 43, the situation is absolutely **similar but reversed:***

1. ***the anterior leg muscle (23) is useless for increasing the upward traction on the pedal** and, therefore, **energy is wasted**.*

2. *the **totality** of the upward traction on the pedal comes uniquely **from the psoas-iliac(22).***

*We will **not** demonstrate the proof in the case of **Fig. 43** since this proof was already made in the first part of this document, but **in reverse** (that of the calf, Fig. 42); **a bit of reflection** will help us understand that Fig. 42 & 43 represent **exactly** the same phenomenon, but **reversed.** If we were to redo the same reversed demonstration with Fig. 43, we would be talking of the **optical illusion of the anterior leg muscle (23)** instead of the **optical illusion of the calf etc...** Remaking such a demonstration would be useless and would take much too long.*

Please note: the distance ratio A/D=3 of Fig. 43 is ***the same*** *as the distance ratio* ***A/B*** *of Fig. 42, meaning that the* ***anterior leg muscle (23) wastes half (approx.) of the total energy during the ascending phase.*** *In the case of Fig. 42, the platform which supports the heel* ***is the solution*** *to eliminate the waste of energy* ***by the calf.*** *We will see later that an* ***extraordinary*** ***event*** *will take place: we will demonstrate that it is possible, by a* ***slight modification to the platform, to eliminate the use of the anterior leg muscle,*** *thus*

> ***doubling*** *the energy efficiency of the* ***ascending*** *phase and, at the same time,* ***doubling*** *the available* ***power*** *since both legs work at the same time.*

Before proceeding to the technical explanation, we must point out that

> *the* ***MAXIMUM*** *tension that* ***the anterior leg muscle (23)*** *can support is* ***VERY SMALL*** *compared to that of* ***the calf.***

The calf can easily support three times your weight (thus, hundreds of pounds) while the anterior leg muscle has much difficulty in supporting a tension of 30 to 40 lbs; to convince yourself, try and lift a weight of 40 lbs with the tip of your foot: extremely difficult.

A very interesting conclusion follows:

The ***psoas-iliac (22)****, the muscle which lifts the thigh, is* ***very powerful****. However, the fact that* ***anterior leg muscle*** *(23) can only support a* ***weak*** *maximum tension (let's say 30 lbs) brings a* ***limit to the maximum upward force that the psoas-iliac (22) can exercise!*** *It is clear that the* ***use of the anterior leg muscle*** *(as in the case of the strap in Fig. 40)* ***PREVENTS the FULL POWER of the psoas-iliac (22) FROM BEING USED*** *and this is* ***in addition*** *to the waste of energy created by the use of the anterior leg muscle (23) itself!*

IT IS IMPORTANT TO UNDERSTAND THIS:

- *in the case of Fig.42, if the downward push by the thigh (5) is 100 lbs, the calf must support a tension of 300 lbs which* ***it can do.***

- *In the case of Fig. 43, if the* ***anterior leg muscle (23) can support a maximum of 30 lbs, this limits to 10 lbs the tension that the psoas-iliac (22) can exercise****, which is* ***insignificant****: the psoas-iliac* ***could*** *apply a tension* ***of several hundred pounds*** *if there was* ***no limitation*** *imposed by the use of* ***the anterior leg muscle (23).***

> *And this is exactly what the modifications to our platform will accomplish:* ***eliminate the use of the anterior leg muscle****, thus allowing us to use the psoas-iliac to its* ***maximum*** *potential!!*

The modifications to our platform, which we will explain shortly, will thus allow:

1. *the **doubling of the energy efficiency of the ascending phase**, by eliminating the use of the anterior leg muscle (23),*

2. *the **use of the psoas-iliac (22) to its maximum potential**, since the use of the anterior leg muscle has been eliminated (that was not the case with the strap of Fig. 40).*

*As **A/B=3** in Fig. 42, the calf (4) contraction must be equal to **three times** the downward pressure applied by the thigh (5): as we have demonstrated, it is the intensity of the downward push of the thigh which determines the intensity of the calf contraction and **not the opposite**. In the case of Fig. 43, the situation **is similar** but **reversed:** if the upward traction exercised by the psoas-iliac (22) is 10 lbs, the anterior leg muscle must support a tension of **three times** that amount, i.e: **30 lbs**; it is the intensity of the upward traction exercised by the psoas-iliac (22) which determines the intensity of the tension supported by the anterior leg muscle (23) and **not the opposite, with this difference:***

if the maximum that the anterior leg muscle can support is 30 lbs, this limits to 10 lbs the upward traction which can be exercised by the psoas-iliac !

THIS IS FABULOUS:

*If we consider **the whole pedaling cycle,** that is the descending **and** ascending phases, we have:*

1. *descending phase: the **energy efficiency is doubled** thanks to the elimination of the use of the calf; in addition, the platform brings **added safety** since the foot can hardly slip, and an **esthetic aspect by eliminating large calves** for the ladies!*

2. *ascending phase: the **energy efficiency is also doubled** thanks to the elimination of the use of the anterior leg muscle; in addition, the **psoas-iliac can be used at full power thus reducing the waistline!***

*Using the two legs simultaneously allows the **doubling** of the available **power in addition** to **doubling the energy efficiency** (energy savings) for **the two** cycling phases!*

What more can one ask?

Now we will explain the modification to the platform in order to eliminate the use of the anterior leg muscle (23). ***IT IS EXTREMELY SIMPLE!***

See Fig. 44, 45 & 46. First we must point out that the rear of the platform (21) follows a ***predetermined trajectory*** *in space, this trajectory being defined by* ***the mechanism (s)*** *(there are* ***several*** *possible mechanisms) which support (s)* ***the rear*** *of the platform; there are also mechanisms where the platform is supported and guided from* ***the front.***

In Fig. 44, no mechanism is shown ***to simplify the drawing.*** *The* ***right*** *foot is illustrated.*

On the platform (21) of Fig. 44, two elements have been added:

1. *A small rod (26) is* ***horizontally*** *attached* ***on the side*** *of the platform, this rod is* ***removable*** *by the cyclist if he/she does not want to use the special footwear which is required. This footwear, as shown in Fig. 45, is fitted with* ***a hole in the heel*** *(27), the hole entrance is in a* ***funnel shape*** *to facilitate the rod (26) insertion* ***without having to look*** *(a skill that can easily be acquired with a little practice). The foot cut-out shown in Fig. 46 shows clearly that the ankle (1) axis of rotation must be in* ***the same*** *line of action as that of the rod axis (26), that is to say,* ***vertical*** *with respect to the platform surface (the 90° angle shown); it is evident that, in this case, the contraction effort required from* ***the anterior leg muscle (23)*** *is (nearly)* ***eliminated*** *during the* ***ascending*** *phase, when the psoas-iliac (22) pulls the platform! If we use this rod (26)* ***in combination*** *with the special footwear (28) equipped with a hole (27) where the rod is inserted, then, in this case,* ***element 25 is not required.***

2. *Element 25* ***can be removed*** *if the cyclist only wishes to use the rod (26) and the special footwear (28). Element 25 is attached* ***to the side*** *of the platform (21), and covers the junction of the foot and the leg as shown; it is* ***well padded*** *for comfort and maintains the whole foot in contact with the platform (21), thus* ***avoiding the contraction of the anterior leg muscle (23)*** *during the* ***ascending*** *phase when the psoas-iliac (22) pulls the platform (21). Please note that element 25 covers* ***only the left side*** *and the top of the right foot (near the leg):* ***the right side is open,*** *permitting the* ***easy*** *insertion of the foot,* ***without looking*** *(after a bit of practice), and the foot is always* ***correctly positioned,*** *automatically!*

FOR A LONG DISTANCE on flat terrain, the ***average*** *force exercised by the* ***psoas-iliac*** *is* ***small;*** *therefore, the cyclist can enjoy the use of these two mechanisms*

all in comfort!!!

FABULOUS!

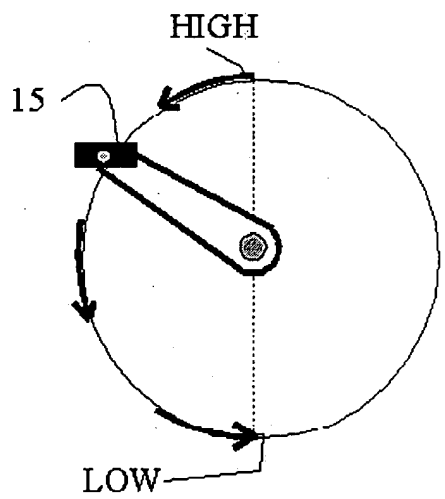


FIG 38

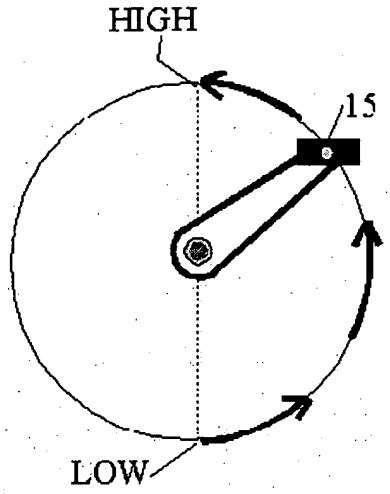


FIG 39

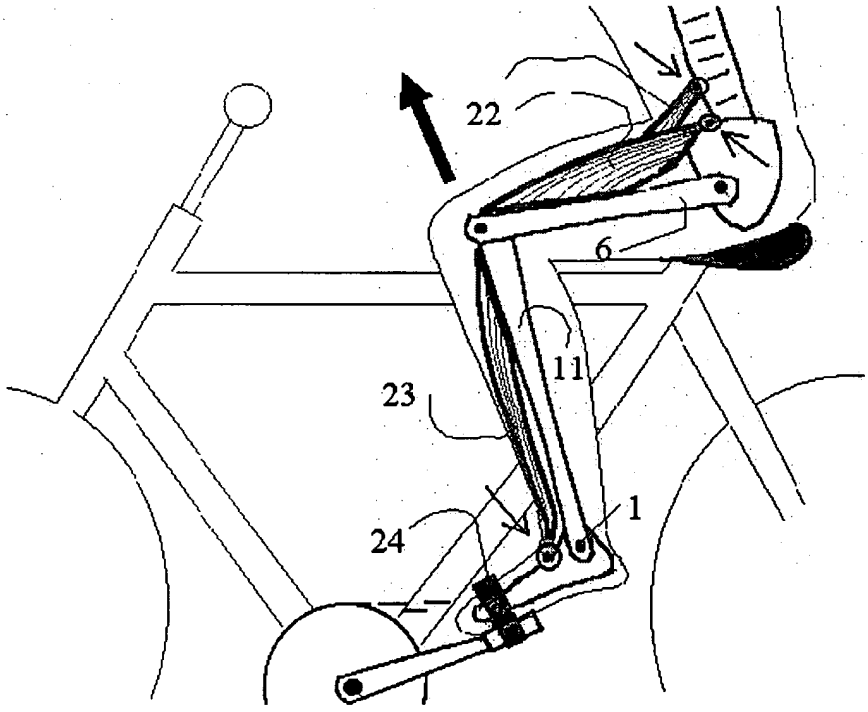


FIG 40

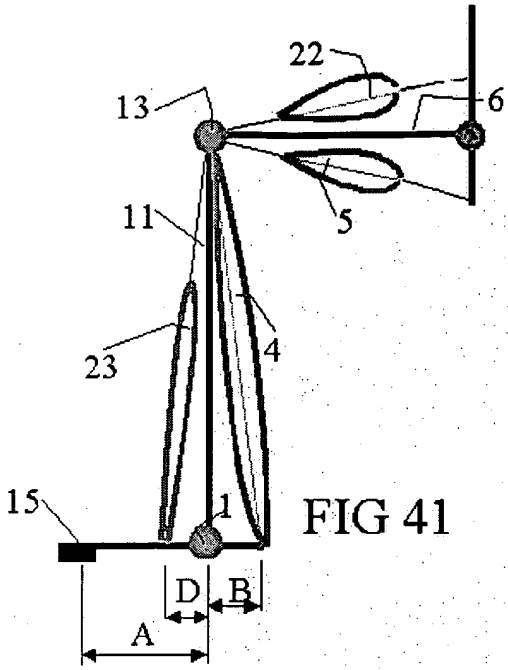


FIG 41

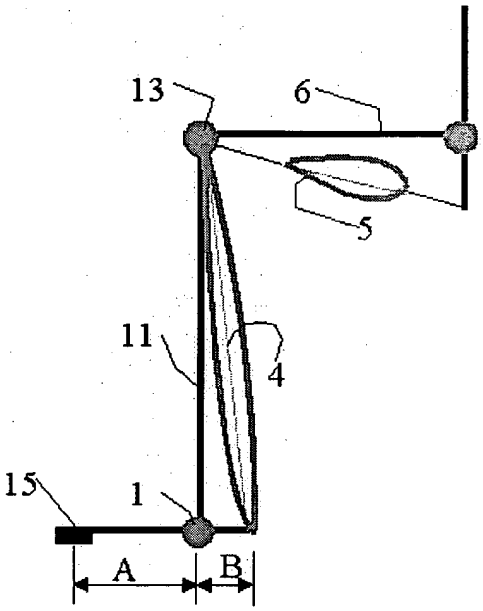


FIG 42

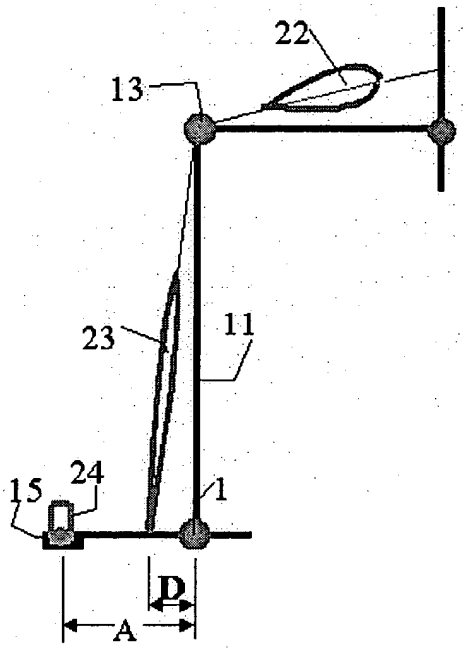


FIG 43

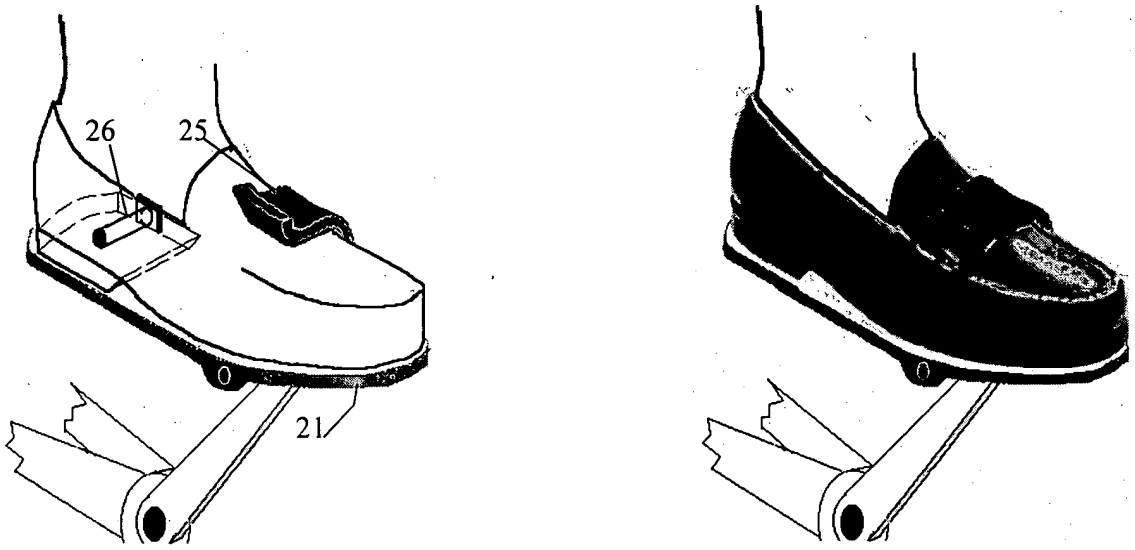


Fig 44

Pour simplifier les dessins, le mécanisme guidant la plateforme n'est PAS illustré.

For clarity, the mechanism quiding the plateform in space is NOT illustrated.

Les pièces 25 et 26 peuvent s'enlever et se replacer facilement, à volonté.

Parts 25 and 26 can be easily removed and put back in place, at will.

Les coureurs cyclistes devraient utiliser les pièces 25 et 26 EN MÊME TEMPS car les coureurs n'ont pas à faire d'arrêts fréquents (poser les pieds rapidement par terre). En ce qui concerne le cycliste de tous les jours, il devrait utiliser une pièce OU l'autre, mais pas les deux en même temps.

Racers should use parts 25 and 26 TOGETHER since they do not have to make frequent stops (quickly place the feet on the ground). The average cyclist should use part 25 OR 26, but not both at the same time.

Remarque: les pièces 25 et 26 permettent d'enlever facilement le pied PAR LE CÔTÉ, ce que nous faisons tout naturellement quand nous utilisons des pédales.

Note: parts 25 and 26 allow an easy foot removal BY THE SIDE in the case of an urgent stop, just like we naturally do with pedals.

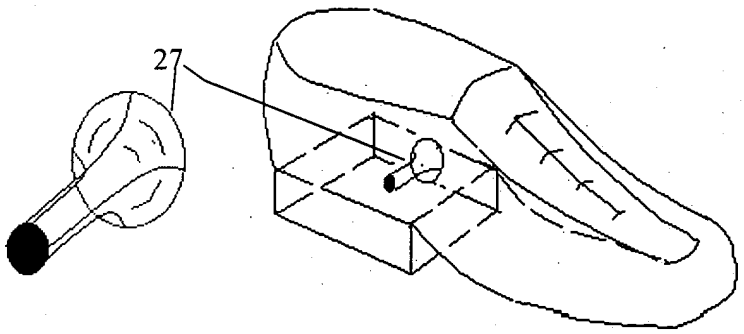


Fig 45

Le trou 27 (en rouge) est en forme d'entonnoir de façon à faciliter l'insertion de l'essieu (26) situé sur le côté de la plateforme.

The hole 27 (in red) has a funnel form to facilitate the insertion of part 26 located on the side of the plateform.

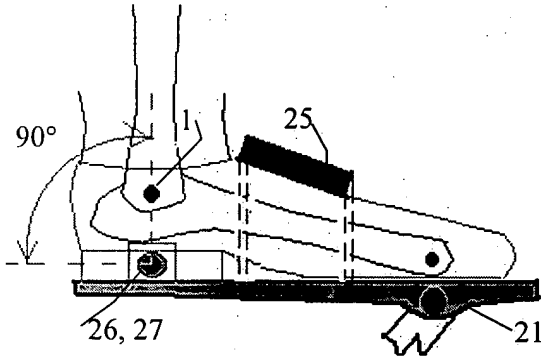


Fig 46

Notez spéciallement que l'axe de la cheville(1) est EXACTEMENT AU DESSUS de l'essieu 26 (trou 27).

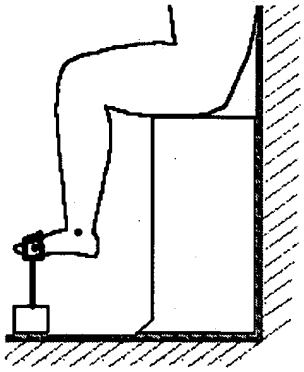
Please note that the ankle axis(1) is EXACTLY ABOVE the axle 26 (hole 27)

ATTACHMENT #11

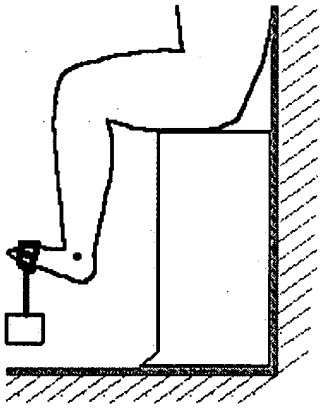
The Ascending Phase – The experimental proof

THE ASCENDING PHASE (cont'd)

THE EXPERIMENTAL PROOF



- **Attach a weight around the toe joints.**
- **Sit down in a manner such that the thigh is horizontal and that the rope is under minimum tension.**



- **Lift the weight by pulling up with your thigh.**
- **Keep adding weight until you reach your capability.**
- **Take note of the weight and continue with second part of the experiment.**

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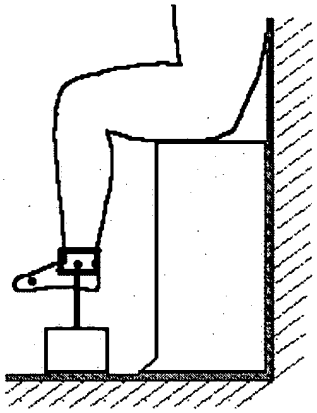
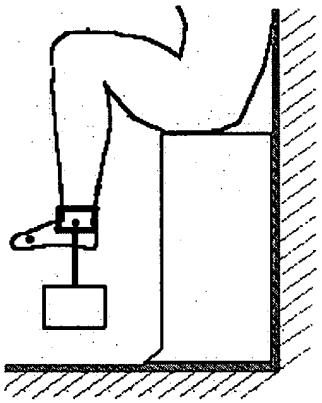
THE ASCENDING PHASE (cont'd)

THE EXPERIMENTAL PROOF (cont'd)



- **Attach a weight around the ankle.**
- **Sit down in a manner such that the thigh is horizontal and that the rope is under minimum tension.**



- **Lift the weight by pulling up with your thigh.**
- **Keep adding weight until you reach your capability.**
- **Take note of the weight and continue with the next page.**

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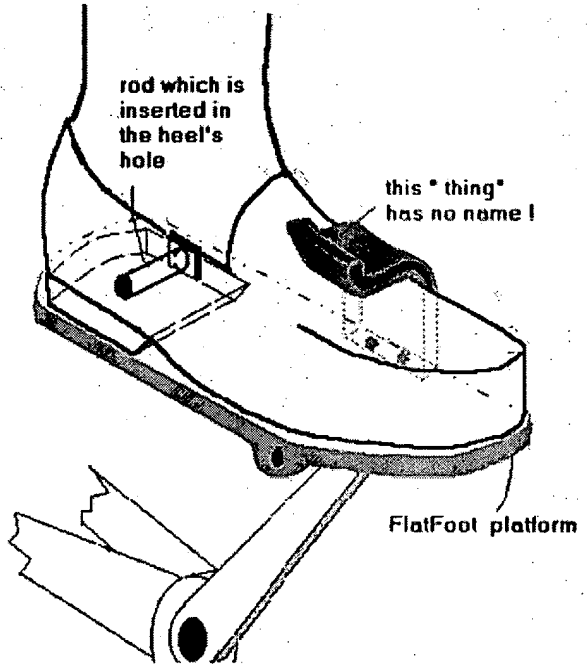
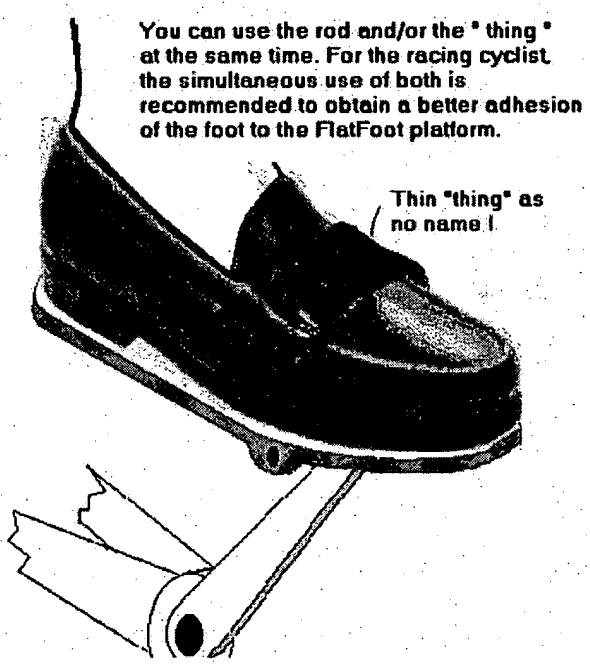
THE ASCENDING PHASE (cont'd)

THE EXPERIMENTAL PROOF (cont'd)

THE RESULT?

BY PULLING UP WITH THE ANKLE, YOU WILL BE ABLE TO LIFT A WEIGHT 2 TO 3 TIMES HEAVIER THAN THE WEIGHT LIFTED USING THE TOE JOINTS!!!





ABOVE IS ONE OF THE PATENTED MECHANISMS: IT ALLOWS THE SAFE APPLICATION OF THE ASCENDING FORCE USING THE ANKLE.

Note: The mechanism to control the platform angle is not shown for clarity.

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